

# **Operational Energy Strategy:**

## **Implementation Plan**



**Department of Defense**

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For the Nation, energy security is an imperative – our economic well-being and international interests depend on it. For the Department of Defense (DoD), energy security means a reliable, secure, and affordable supply of energy for military missions, today and in the future. Several trends, such as rising global demand for energy, changing geopolitics, and new threats, mean that the cost and availability of energy for deployed forces and for all Americans will be less certain in the future.

In addition to supporting national energy security priorities, DoD is taking steps to promote the energy security of military missions. Our challenge is to make sure U.S. Forces are ready for any threat, anywhere in the world, and meeting that challenge requires us to improve the efficiency of our energy use and the diversity of our energy sources, and, ultimately, to build a military force that uses energy as a strategic advantage rather than bears it as a burden.

To that end, DoD will continue to be a leader in harnessing energy innovation to enhance operational effectiveness. This includes ongoing efforts to integrate energy efficiency and renewable energy into our forces, installations, base camps, and operations around the world. For the long term, we must incorporate better energy performance into strategic planning and the systems and equipment we procure to meet future threats. By doing so, we can save lives that might have been lost guarding and moving fuel, we can save money that would have been spent on fuel and related equipment, and we can improve combat effectiveness.

In executing the Operational Energy Strategy Implementation Plan, DoD will begin to transform the way we power the current and future force. By changing the DoD energy posture, America will have a military that is better able to project and sustain forces around the world to meet any challenge to the Nation's security and the interests of the American people.



## Summary

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Pursuant to title 10, U.S.C., section 138c, the Department of Defense (DoD) published the Operational Energy Strategy on June 14, 2011, to transform the way U.S. Armed Forces consume energy in military operations. The Strategy sets the direction for operational energy use within the Office of the Secretary of Defense (OSD), Office of the Chairman of the Joint Chiefs of Staff (CJCS) and the Joint Staff, Combatant Commands, Military Departments, and Defense agencies (hereinafter referred to collectively as the “DoD Components”).

The goal of the Operational Energy Strategy is energy security for the Warfighter – to assure that U.S. forces have a reliable supply of energy for 21<sup>st</sup> century military missions. For DoD to reach this goal, the Strategy provides a three-fold approach:

- **More Fight, Less Fuel: Reduce Demand for Energy in Military Operations.** Today’s military missions require large and growing amounts of energy with supply lines that can be costly, vulnerable to disruption, and a burden on Warfighters. The Department needs to improve its ability to measure operational energy consumption, reduce demand, and increase the efficiency of energy use to enhance combat effectiveness.
- **More Options, Less Risk: Expand and Secure Energy Supplies for Military Operations.** Reliance on a single energy source – petroleum – has economic, strategic, and environmental drawbacks. In addition, the security of energy supply infrastructure for critical missions at fixed installations is not always robust. The Department needs to diversify its energy sources and protect access to energy supplies to have a more assured supply of energy for military missions.
- **More Capability, Less Cost: Build Energy Security into the Future Force.** While the force’s energy requirements entail tactical, operational, and strategic risks, the Department’s institutions and processes for building future military forces do not systematically consider such risks and costs. The Department needs to integrate operational energy considerations into the full range of planning and force development activities.

The Operational Energy Strategy also provides that the Department will release an Implementation Plan establishing specific targets and timelines. The initiatives in this Implementation Plan provide a roadmap for the Department to meet the Strategy’s goal of energy security for the Warfighter. The intent of this Implementation Plan is to integrate operational energy considerations and transformation into existing programs, processes, and institutions.

The Assistant Secretary of Defense for Operational Energy Plans and Programs (ASD(OEPP)) will lead the oversight and governance of the Operational Energy Strategy. Each target identifies Offices of Primary Responsibility (OPR) and Offices of Coordinating Responsibility (OCR) that

will play lead and supporting roles in implementing the Strategy. For those reporting requirements assigned to the Department of the Navy, that Department may elect to report separately for the Navy and the Marine Corps. While all activities in this Implementation Plan will begin over the next 12 months, each will generate outcomes over the near, mid, and long term; the timing of those outcomes is noted for each target (see Table 1).

Together, the Operational Energy Strategy and Implementation Plan will inform the ASD(OEPP) annual certification of DoD budgets, along with other budget exhibits. The ASD(OEPP) and a designee from the CJCS will co-chair a Defense Operational Energy Board (further information at Appendix D) to promote operational energy security, oversee the implementation of the Strategy, and measure Departmental success. The Defense Operational Energy Board will serve as the primary body to charter and receive work related to this Implementation Plan, forming working groups as needed.

ASD(OEPP), in consultation with relevant offices within OSD, the Military Departments, Defense agencies, and the Joint Staff, will develop a charter that outlines the organization, governance, membership, functions, and responsibilities of the Defense Operational Energy Board and present the charter at the 2<sup>nd</sup> Quarter FY 2012 meeting of the Board. The co-chairs shall review and approve the charter. In lieu of an approved charter, ASD(OEPP) will use existing authorities to oversee and immediately initiate execution of the Operational Energy Strategy through the targets and due dates identified in this Implementation Plan.

The co-chairs will report the results of the Defense Operational Energy Board meetings to the Secretary of Defense and CJCS.

## More Fight, Less Fuel: Reduce Demand for Energy in Military Operations

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**Strategic Goal:** The Department will reduce the overall demand for operational energy and improve the efficiency of military energy use in order to enhance combat effectiveness and reduce risks and costs for military missions.

To achieve this strategic goal, the Department will measure its operational energy consumption; improve energy performance in operations and training; and promote defense energy innovation.

Detailed descriptions of the targets listed below are available in Appendix A.

### **Target 1: Measure Operational Energy Consumption.**

- Establish Operational Energy Consumption Baselines. The Military Departments and Defense agencies will report to the Defense Operational Energy Board (2<sup>nd</sup> Quarter FY 2012) an operational energy baseline, using all available data on actual energy consumption in support of military operations in FY 2011 and projected consumption in FY 2012 – FY 2017.
- Improve and Update Operational Energy Baselines. The Military Departments and Defense Agencies will report to the Defense Operational Energy Board (3<sup>rd</sup> Quarter FY 2012) on any actions taken or needed to improve these baselines.

### **Target 2: Improve Energy Performance and Efficiency in Operations and Training.**

- Support Current Operations with Energy Improvements. The Combatant Commands will report to the Defense Operational Energy Board (3<sup>rd</sup> Quarter FY 2012 and recurring) on how they guide their forces to improve energy performance and efficiency in operations and the effectiveness of this guidance. The report will assess the effectiveness of rapid fielding of fuel demand management improvements by the Military Departments, including energy efficiency and alternative generation technologies, to Afghanistan and other locations in support of contingency operations. The intent of this task is to improve the alignment of capabilities with theater requirements and identify DoD-wide approaches to remediating any recognized shortfalls.
- Improve the Operational Energy Efficiency of the Military Departments. The Military Departments will report to the Defense Operational Energy Board (3<sup>rd</sup> Quarter FY 2012) progress against their own current or updated energy performance goals and metrics and demonstrate how such progress supports the Operational Energy Strategy priority to reduce the demand for fuel and increase capability in military operations.

- Establish Departmental Operational Energy Performance Metrics. The Defense Operational Energy Board will develop Departmental operational energy performance metrics to promote the energy efficiency of military operations by the end of FY 2012. The Board may establish a working group to develop these metrics, in consultation with the DoD Components and based on the consumption baselines provided by the Military Departments and Defense agencies.

**Target 3: Promote Operational Energy Innovation.**

- Assess Departmental Energy Science and Technology Gaps and Recommend Options. The Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) will identify investment gaps in the Department's science and technology (S&T) portfolio necessary to reduce demand, improve system efficiency, and expand supply alternatives, as articulated in the Operational Energy Strategy. ASD(R&E) will provide the final report to the Defense Operational Energy Board (4<sup>th</sup> Quarter FY 2012) and include recommendations on possible options for filling the gaps.

## **More Options, Less Risk: Expand and Secure Energy Supplies for Military Operations**

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**Strategic Goal:** The Department will diversify and secure military energy supplies in order to improve the ability of U.S. forces to obtain the energy required to perform their missions.

To achieve this goal, the Department will identify and remediate energy-related risks to critical assets and establish a Departmental policy for alternative fuels.

Detailed descriptions of the targets listed below are available in Appendix B.

### **Target 4: Improve Operational Energy Security at Fixed Installations**

- Identify Operational Energy Security Risks at Fixed Installations. The Military Departments and other asset owners will brief the Defense Operational Energy Board (3<sup>rd</sup> Quarter FY 2012 and recurring) on energy-related risks to fixed installations that directly support military operations, to include those identified through Assistant Secretary of Defense for Homeland Defense and America's Security Affairs' (ASD(HD&ASA)) Defense Critical Infrastructure Program (DCIP).

### **Target 5: Promote the Development of Alternative Fuels.**

- Establish a Departmental Alternative Fuels Policy. At the Defense Operational Energy Board (2<sup>nd</sup> Quarter FY 2012), ASD(OEPP) will present a draft Departmental policy on alternative fuels. The Defense Operational Energy Board may recommend a final policy to ASD(OEPP), revising and updating its recommendation as needed.
- Establish a Departmental Alternative Fuels Investment Portfolio. The Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy (DASD(MIBP)) will present to the Defense Operational Energy Board (4<sup>th</sup> Quarter FY 2012) a briefing on joint investments in alternative fuels using Defense Production Act (DPA) authorities.

## More Capability, Less Cost: Build Energy Security into the Future Force

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**Strategic Goal:** To provide energy security and enhanced warfighting capability for U.S. forces in the future, the Department will consider energy security in strategic planning and force development.

To achieve this goal, the Department will incorporate energy security considerations into the requirements and acquisition processes and adapt policy, doctrine, professional military education (PME), and Combatant Command activities.

Detailed descriptions of the targets listed below are available in Appendix C.

### Target 6: Incorporate Energy Security Considerations into Requirements and Acquisition.

- Incorporate Operational Energy into Modeling and Simulation. The Military Departments will report to the Defense Operational Energy Board (3<sup>rd</sup> Quarter FY 2012 and recurring) on how they are using or modifying analytic techniques and modeling and simulation (M&S) tools to account for operational energy considerations in force planning, capability gap analyses, and requirements development and acquisition program-related analyses.
- Include Operational Energy in the Requirements Process. In accordance with forthcoming Joint Staff policy, the Joint Staff, U.S. Special Operations Command (USSOCOM), and the Military Departments will meet the congressional intent of an energy performance attribute in the requirements development process. Through the Joint Requirements Oversight Council, the Vice Chairman of the Joint Chiefs of Staff (VCJCS) will oversee implementation of this effort in individual programs. The Joint Staff, USSOCOM, and the Military Departments will report overall progress in implementing an energy performance attribute to the Defense Operational Energy Board (3<sup>rd</sup> Quarter FY 2012).
- Apply Operational Energy Analyses to Defense Acquisitions. In accordance with forthcoming policy from the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)), the Military Departments will develop and apply Fully Burdened Cost of Energy (FBCE) analyses throughout the acquisition process. The Military Departments will report overall progress on implementing FBCE to the Defense Operational Energy Board (3<sup>rd</sup> Quarter FY 2012).

**Target 7: Adapt Policy, Doctrine, Professional Military Education, and Combatant Command Activities.**

- Adapt and Adopt Policy, Doctrine, and PME for Operational Energy. The Joint Staff and Military Departments will report to the Defense Operational Energy Board (4<sup>th</sup> Quarter FY 2012) on how policy, doctrine, and PME will support reduced energy demand, expanded energy supply, and future force development.
- Incorporate Operational Energy into Combatant Command Activities. As appropriate and consistent with annual classified guidance to the Combatant Commands, the Joint Staff and Combatant Commands will report to the Defense Operational Energy Board (4<sup>th</sup> Quarter FY 2012) on command measures to incorporate Operational Energy Strategy goals into theater campaign plans, security cooperation initiatives, joint and combined exercises, and other activities designed to achieve theater and country objectives.

Table 1: Summary of Implementation Plan Targets and Outcomes

Targets	Tasks	Near-Term, FY 2012 - FY 2013	Mid-Term, FY 2014 - FY 2018	Long- Term, FY 2019+
Measure Operational Energy Consumption	Establish Operational Energy Consumption Baselines	✓		
	Improve and Update Operational Energy Baselines		✓	✓
Improve Energy Performance and Efficiency in Operations and Training	Support Current Operations with Energy Improvements	✓	✓	✓
	Improve Operational Energy Efficiency of the Military Departments	✓	✓	✓
	Establish Departmental Operational Energy Performance Metrics	✓	✓	✓
Promote Operational Energy Innovation	Assess Departmental Energy S&T Gaps and Recommend Options		✓	✓
Improve Operational Energy Security at Fixed Installations	Identify Operational Energy Security Risks at Fixed Installations	✓	✓	✓
Promote the Development of Alternative Fuels	Establish a Departmental Alternative Fuels Policy		✓	✓
	Establish a Departmental Alternative Fuels Investment Portfolio		✓	✓
Incorporate Energy Security Considerations into Requirements and Acquisition	Incorporate Operational Energy into M&S Tools	✓	✓	✓
	Include Operational Energy in the Requirements Process		✓	✓
	Apply Operational Energy Analyses to Defense Acquisitions		✓	✓
Adapt Policy, Doctrine, PME, and Combatant Command Activities	Adapt and Adopt Policy, Doctrine, and PME for Operational Energy		✓	✓
	Incorporate Operational Energy into Combatant Command Activities		✓	✓

## Appendix A:

### More Fight, Less Fuel: Reduce Demand for Energy in Military Operations

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#### Target 1: Measure Operational Energy Consumption.

	Near-Term, FY 2012 - FY 2013	Mid-Term, FY 2014 - FY 2018	Long-Term, FY 2018 FY 2019+
• Establish Operational Energy Consumption Baselines	✓		
• Improve and Update Operational Energy Baselines		✓	✓

Challenge. Reliable and detailed data on energy consumption are essential to focusing Department investments. To improve decision making related to operational energy, the Department needs a credible baseline for consumption. However, current methods for measuring operational energy consumption typically do not include information on end use and limit the Department's ability to inform planning, programming, and operational decisions. Collecting data on end use will better inform decision-making across the Department.

Ongoing Efforts. The Military Departments and the Defense Logistics Agency (DLA) – Energy have a range of analytic tools and systems to measure current and future operational energy consumption. For instance, the office of the Deputy Under Secretary of Defense for Installations and Environment (DUSD(I&E)) collects fuel consumption data from DLA for the Annual Energy Management Report. The Army is deploying the Tactical Fuels Manager Defense (TFMD) system to bases in Afghanistan to improve fuel asset inventory management and has implemented initiatives to improve management of fuel consumption in contingency contracting activities such as the Logistics Civil Augmentation Program (LOGCAP). The Air Force uses the Air Force Total Ownership Cost (AFTOC) database to account for fuel purchased by aircraft type but has limited ability to cross-reference data with supported missions and activities. The Navy's Energy Usage Reporting System (NEURS) measures underway consumption by ships but has similar limitations related to place of issue or purpose of the supported activity. In theater, the Marine Corps also tracks tactical fuel delivery data to the Forward Operating Base level via the Marine Expeditionary Force Bulk Petroleum Contingency Report. Finally, each of the Military Departments uses a range of assumptions and planning factors to estimate projected consumption for use in developing annual Program Objective Memoranda (POM).

Responsibilities. Military Departments and Defense agencies will report operational energy baselines to the Defense Operational Energy Board (2<sup>nd</sup> Quarter FY 2012). These baselines will include all available data on actual energy consumption in support of military operations in FY 2011 and projected consumption in FY 2012 – FY 2017. The data collected for FY 2011 will account for consumption by organic forces as well as through contingency contracting, and include as much detail as is currently available. While not specifically responsible for providing information, the Combatant Commands are critical stakeholders in the data collection process and the Joint Staff will provide supporting taskings.

Estimates for consumption in FY 2012 – FY 2017 will use assumptions about inventory, equipment, and operations tempo to project total force operational energy demand in a “sand chart” format. With contributions from the Military Departments and Defense agencies, this target will enable the first projection of Department-wide operational energy consumption and inform required reports to Congress on current and future energy needs. Related to these force-wide projections, the DoD Components will identify operational energy requirements for mutually agreed upon scenarios from the Department’s integrated security construct.

Military Departments and Defense agencies will report to the Defense Operational Energy Board (3<sup>rd</sup> Quarter FY 2012) on any actions taken or needed to improve these baselines. This target does not necessarily entail the real-time measurement of energy consumption by individual pieces of equipment. Instead, the Military Departments and Defense agencies will evaluate a range of options – including new systems, improvements to current and related systems, and/or application of sampling and extrapolation to existing data – to improve the Department’s understanding of the location, purpose, and end use of operational energy consumption.

These plans should include resource requirements needed in year of execution, FY 2013 budget, FY 2014 POM, and over the future years defense plan (FY 2014 – FY 2018). The resource information provided will include annual investments by Treasury Code, Budget Activity Code, OSD Program Element, and Budget Line Item. Timely receipt of this information will enable investment requirements to inform the FY 2014 Program Budget Review and provide benchmarks for measuring performance against the Operational Energy Strategy in the Operational Energy Budget Certification. OSD Cost Assessment and Program Evaluation (CAPE) and USD(Comptroller) will support the achievement of these tasks, as required.

<b>Offices of Primary Responsibility (OPR)</b>	<b>Offices of Coordinating Responsibility (OCR)</b>
<ul style="list-style-type: none"><li>• USD(AT&amp;L)</li><li>• Department of the Army</li><li>• Department of the Navy</li><li>• Department of the Air Force</li></ul>	<ul style="list-style-type: none"><li>• OSD CAPE</li><li>• USD(Comptroller)</li><li>• USD(P&amp;R)</li><li>• Joint Staff</li><li>• Combatant Commands</li><li>• DLA</li></ul>

## Target 2: Improve Energy Performance and Efficiency in Operations and Training.

	Near-Term, FY 2012 - FY 2013	Mid-Term, FY 2014 - FY 2018	Long-Term, FY 2019+
• Support Current Operations with Energy Improvements	✓	✓	✓
• Improve Operational Energy Efficiency of the Military Departments	✓	✓	✓
• Establish Departmental Operational Energy Performance Metrics	✓	✓	✓

Challenge. During FY 2010, the Department of Defense consumed nearly 5 billion gallons of petroleum, most of which supported operations and training. Today's military missions require large amounts of energy with supply lines that can be costly, vulnerable to disruption, and a burden on Warfighters. Reducing demand for operational energy can improve warfighting capabilities and reduce costs.

Ongoing Efforts. Each of the Military Departments has established goals and metrics related to improving the energy efficiency of the force, noted in the table below.<sup>i</sup> In addition, each of the Military Departments is conducting a variety of activities to reduce the consumption of energy in theater. For example, in June 2011, the Army deployed the 1-megawatt Afghan Microgrid Project (AMP) to Bagram Airfield, and the Marines accelerated deployment of energy-saving technologies to 10 battalions in Afghanistan. A number of forward bases in Afghanistan and Iraq have transitioned from spot generation to prime power. Already, the Military Departments likely will include legacy equipment modifications and upgrades to reduce energy demand in the FY 2014 – FY 2018 POM submission. Finally, the Military Departments are reducing their demand for operational energy in training by increasing the use of simulators in pilot training and adjusting flying hours accordingly. For instance, the Air Mobility Command (AMC) is reducing fuel consumption by changing the loading and routing of aircraft.

Responsibilities. The Combatant Commands will brief the Defense Operational Energy Board (3<sup>rd</sup> Quarter FY 2012 and recurring) on how they guide their forces to improve energy performance and efficiency in operations and the effectiveness of this guidance. The report will assess the effectiveness of rapid fielding of fuel demand management improvements by the Military Departments – including energy efficiency and alternative generation technologies – to Afghanistan and other locations in support of contingency operations. This assessment should summarize the impact of rapid fielding efforts and provide recommendations on future needs and requirements. As an example, including shelter modification kits for the Army’s Force Provider system; improving tent liners, lighting, and alternative energy systems for 10 Marine Corps Battalions; and centralizing power at prioritized contingency base camps should be capable of reducing fuel demand by at least 30 million gallons per year across the Combined Joint Operations Area – Afghanistan by FY 2013.

The Military Departments also will report to the Defense Operational Energy Board (3<sup>rd</sup> Quarter FY 2012) progress against their own current or updated efficiency goals and metrics and demonstrate how such progress supports the Operational Energy Strategy goal of reducing the demand for fuel and increasing capability in military operations. During the review of these goals and metrics, the Military Departments should consider the near-term initiatives identified in the Operational Energy Strategy, including energy efficiency in contingency base camps (to include contingency contracting); energy performance upgrades and modifications to existing systems; and energy demand improvements in overall training and operations. The Military

**Military Departments’ Goals and Metrics for Improving the Energy Efficiency of the Force**

<b>Army</b>	<ul style="list-style-type: none"> <li>• 16 Net Zero Energy, Waste, and/or Water installations by 2020.</li> <li>• 25 Net Zero installations at home and/or abroad by 2030.</li> </ul>
<b>Navy</b>	<ul style="list-style-type: none"> <li>• Increase efficiency and reduce fuel consumption afloat by 15 percent by 2020.</li> </ul>
<b>Air Force</b>	<ul style="list-style-type: none"> <li>• Increase aviation energy efficiency by 10 percent by 2020.</li> </ul>
<b>Marine Corps</b>	<ul style="list-style-type: none"> <li>• Increase energy efficiency on the battlefield by 50 percent by 2025.</li> <li>• As a result, reduce fuel consumed per Marine per day by 50 percent by 2025.</li> </ul>

Departments should focus on these areas to enhance warfighting capability by reducing the volume of fuel needed to conduct operations.

The Defense Operational Energy Board will develop Departmental operational energy performance metrics to promote the energy efficiency of military operations by the end of FY 2012. The Board may establish a working group to develop these metrics, in consultation with the DoD Components and based on the consumption baselines provided by the Military Departments and Defense agencies. Subsequent Defense Operational Energy Board meetings and OEPP Budget Certifications will review progress in meeting these Departmental energy performance targets.

<b>Offices of Primary Responsibility (OPR)</b>	<b>Offices of Coordinating Responsibility (OCR)</b>
<ul style="list-style-type: none"><li>• ASD(OEPP)</li><li>• Department of the Army</li><li>• Department of the Navy</li><li>• Department of the Air Force</li><li>• Joint Staff</li></ul>	<ul style="list-style-type: none"><li>• USD(AT&amp;L)</li><li>• USD(P&amp;R)</li><li>• Combatant Commands</li></ul>

### Target 3: Promote Operational Energy Innovation.

	Near-Term, FY 2012 - FY 2013	Mid-Term, FY 2014 - FY 2018	Long-Term, FY 2018 FY 2019+
• Assess Departmental Energy S&T Gaps and Recommend Options		✓	✓

Challenge. Operational energy is a new management area for the Department with still-evolving investment approaches and portfolios. Innovation is a key method for reducing the risks and expanding capabilities through changes in the Department's energy consumption. To accelerate technical progress, the Department will identify energy-relevant technology areas requiring additional investment and align S&T investment portfolios to address operational energy problems and opportunities. In addition, S&T processes could consider examining scenarios from the Department's integrated security constructs and expand the use of modeling and simulation tools.

Ongoing Efforts. The Military Departments and the Defense Advanced Research Projects Agency (DARPA) each have made significant S&T investments across a spectrum of power and energy technologies. In addition, the Army and the Marine Corps are developing Initial Capabilities Documents that identify capability gaps and warfighter needs regarding operational energy. Combatant Commands also have S&T Integrated Priority Lists that include energy. Finally, the Department of Energy and private sector are making important research investments with military applications.

Responsibilities. ASD(R&E) will conduct a technology gap assessment that focuses on options for reducing the demand for energy and assuring the supply of energy at tactical and operational levels. The assessment will consider current S&T investments and initiatives across the Department, operational energy needs and requirements, and new technical opportunities, including from outside DoD. ASD(R&E) will execute and coordinate this assessment through the S&T Executive Committee, leveraging relevant Communities of Interest. ASD(R&E) will provide the final report to the Defense Operational Energy Board (4<sup>th</sup> Quarter FY 2012) and include recommendations on possible options for filling the gaps.

Offices of Primary Responsibility (OPR)	Offices of Coordinating Responsibility (OCR)
• ASD(R&E)	• Department of the Army • Department of the Navy • Department of the Air Force • DARPA

## Appendix B:

### More Options, Less Risk: Expand and Secure the Supply of Energy to Military Operations

#### Target 4: Improve Operational Energy Security at Fixed Installations.

	Near-Term, FY 2012 - FY 2013	Mid-Term, FY 2014 - FY 2018	Long-Term, FY 2019+
• Identify Operational Energy Security Risks at Fixed Installations	✓	✓	✓

Challenge. Assuring continuous electrical service to critical DoD missions at fixed installations is vitally important to current operations and operational preparedness. Reliable and assured electrical power is one aspect of the larger defense critical infrastructure challenge. In the past the reliability of commercially provided power was deemed sufficient for critical missions with the back-up power sources and support that existed. That reliability may be increasingly challenged, just as our forces' reliance on reach-back capabilities is increasing. Assessments should include all aspects of critical defense mission risks, including scope and likelihood of threat, criticality of mission, effect of electricity loss to mission, and existing mitigation actions. Those risks and planned mitigations should be captured in resulting Risk Decision Packages.

Ongoing Efforts. DoD Components are engaged in significant efforts to identify and mitigate existing operational risk related to critical missions. Recent improvements in energy-related DCIP oversight through the Energy Grid Security Executive Council, interagency collaboration, joint projects with the utility industry, on-site power generation and backup, and smart-grid research and demonstration projects, are improving the Department's ability to reduce operational risk. In particular, the Military Departments conducted assessments of the risks posed to mission critical installations, facilities, and activities in response to section 335 of the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009. More broadly, the Military Departments have a long history of working with local utility providers to develop assured power provisioning solutions that are both cost and mission effective.

Responsibilities. Military Departments and other asset owners will brief the Defense Operational Energy Board (3<sup>rd</sup> Quarter FY 2012 and recurring) on energy-related risks to fixed installations that directly support military operations, to include those identified through ASD(HD&ASA)'s Defense Critical Infrastructure Program. These energy-related concerns should include primary power and back-up power architectures and procedures, required and planned mitigations to identified gaps or vulnerabilities, back-up fuel supplies, and other related

issues. The Defense Operational Energy Board will work with the Military Departments, ASD(HD&ASA), and DUSD(I&E) to understand assessment methods and assumptions, including existing guidance to assess and mitigate known grid and cyber vulnerabilities, and oversee execution of mitigation actions as part of the OEPP budget certification process. The Military Departments will coordinate identified risks with appropriate Combatant Commands through the Joint Staff.

<b>Offices of Primary Responsibility (OPR)</b>	<b>Offices of Coordinating Responsibility (OCR)</b>
<ul style="list-style-type: none"><li>• Department of the Army</li><li>• Department of the Navy</li><li>• Department of the Air Force</li></ul>	<ul style="list-style-type: none"><li>• USD(Policy)</li><li>• USD(AT&amp;L)</li><li>• Combatant Commands</li><li>• Joint Staff</li><li>• Intelligence Community</li></ul>

## Target 5: Promote the Development of Alternative Fuels.

	Near-Term, FY 2012- FY 2013	Mid-Term, FY 2014- FY 2018	Long-Term, FY 2019+
• Establish a Departmental Alternative Fuels Policy		✓	✓
• Establish a Departmental Alternative Fuels Investment Portfolio		✓	✓

Challenge. The Department has a strong interest in securing non-petroleum sources of fuel consistent with the most recent Quadrennial Defense Review, which identifies access to reliable sources of energy as key to DoD's energy security. Moreover, the Department should pursue an alternative fuels policy that supports the varying roles and missions of forces operating on air, land, and sea. However, there is currently no such Department-wide policy or investment strategy for alternative fuels.

Ongoing Efforts. The Departments of Air Force and Navy have identified goals for the use of alternative fuels. The Air Force is currently working to certify a 50/50 blend of JP-8 and alternative fuel for use in its aircraft and plans to be ready to cost-competitively acquire 50 percent of its domestic aviation fuel requirement, or roughly 387 million gallons of JP-8 per year, via an alternative fuel source by 2016. The Navy plans to purchase 200 thousand gallons of a 50/50 JP-5 and 700 thousand gallons of a 50/50 F-76 to sail a "Green Strike Group" domestically in 2012. This is a step toward the demonstration of a "Great Green Fleet" using 50/50 blends in 2016, which will require 3 million gallons of biofuels. The 2020 goal is to use alternative sources for half of all energy consumption afloat, which will require 300 million gallons of biofuels. The Military Departments and DLA-Energy also are partnering with organizations such as the Commercial Aviation Alternative Fuels Initiative, Air Transport Association, and American Society for Testing and Materials International to promote the development, certification, commercialization, and marketing of alternative fuels.

In August 2011, the Departments of Navy, Energy, and Agriculture announced a joint initiative to, in close partnership with the private sector, help catalyze a competitive advanced biofuels industry compatible with our military infrastructure. Each agency plans to provide \$170 million, for a total of \$510 million, over the next 3 years to support this initiative, utilizing DPA authorities and the Department of Agriculture's Commodity Credit Corporation.

While engaged in certification of its equipment for alternative fuels, the Army does not have specific goals or policies in place for procurement or widespread adoption of alternative fuels.

Responsibilities. At the Defense Operational Energy Board (2<sup>nd</sup> Quarter FY 2012), ASD(OEPP) will present a draft Departmental policy on alternative fuels. The Defense Operational Energy Board may recommend a final policy to ASD(OEPP), revising and updating its recommendation as needed. This policy will ensure that a common framework guides alternative fuels decisions and is informed by the best scientific and technical expertise available to the Federal Government. The policy will aim to maximize any potentially significant national or military benefits while effectively managing technical and financial risk. Finally, this policy will ensure that relevant new alternative fuels products meet common militarily relevant criteria, such as materials and infrastructure compatibility, fungibility with current fuel supplies, increased flexibility in fueling options, and other factors.

Building on the initiative announced in August 2011, the DASD(MIBP) will present to the Defense Operational Energy Board (4<sup>th</sup> Quarter FY 2012) a briefing on joint investments in alternative fuels using DPA authorities. In consultation with the Departments of the Navy and Air Force, DLA, Office of ASD(OEPP), Departments of Energy and Agriculture, and other relevant stakeholders, DASD(MIBP) will ensure that future DPA alternative fuels investments for DoD applications are consistent with the above policy and promote diverse fuel options, particularly for air and maritime operations.

<b>Offices of Primary Responsibility (OPR)</b>	<b>Offices of Coordinating Responsibility (OCR)</b>
<ul style="list-style-type: none"><li>• ASD(OEPP)</li><li>• DASD(MIBP)</li></ul>	<ul style="list-style-type: none"><li>• Department of the Army</li><li>• Department of the Navy</li><li>• Department of the Air Force</li><li>• Joint Staff</li><li>• ASD(R&amp;E)</li><li>• DLA</li></ul>

## Appendix C: More Capability, Less Cost: Build Energy Security into the Future Force

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### Target 6: Incorporate Energy Security Considerations into Requirements and Acquisition.

	Near-Term, FY 2012 - FY 2013	Mid-Term, FY 2014 - FY 2018	Long-Term, FY 2019+
• Incorporate Operational Energy into Modeling and Simulation Tools	✓	✓	✓
• Include Operational Energy in the Requirements Process		✓	✓
• Apply Operational Energy Analyses to Defense Acquisitions		✓	✓

Challenge. Current requirements development and acquisition processes do not adequately analyze the ability of adversaries to interdict energy logistics, the effects of attrition on U.S. force effectiveness, or the effects of sustainment demand on force capability and effectiveness. Overall, the Department's operational analysis tools do not incorporate the energy sustainment needed to deploy and employ forces and do not adequately evaluate how threats to sustainment affect combat outcomes. The Department needs better analytic tools and techniques, including M&S, across the spectrum of operations, from system-level to the campaign-level, to represent the effects of logistics demand and the vulnerability of such logistics on operational outcomes.

Given these analytical challenges, individual platforms and the overall Joint force are designed in a way that may increase the opportunity costs of protecting growing fuel logistics on land, sea, and air, thus degrading U.S. operations tempo and potentially denying the commander needed combat capacity to accomplish tactical and operational missions. An energy performance metric for systems that create a demand for energy sustainment will ensure that energy logistics considerations are appropriately included in a mission capability tradespace with the other important capability issues (e.g., lethality, survivability, stealthiness). Even in scenarios where U.S. energy and logistics may not be seriously contested, energy performance thresholds may be warranted to help limit the diversion of resources from other investments and requirements.

Acquisition program oversight authorities also lack a methodology for estimating the relative costs of transporting and protecting needed fuel supplies and applying such comparisons in analyses of alternatives. While Total Ownership Cost estimates reported by program offices provide "peacetime" fuel commodity costs, these methods do not include the logistics, force

protection, and attrition related to energy delivery in operations. These acquisition challenges extend to contingency contracting for logistical services, which may benefit from conditions and incentives that could improve the efficiency of energy use on the battlefield.

Ongoing Efforts. Regarding M&S tools, the Army Materiel Systems Analysis Activity is improving techniques for estimating energy consumption at the platform level for ground vehicles, and a recent study (Methodology and Analysis for Energy Security in Military Operations) recommended modifications to tools, models, and databases used to analyze operational missions. The Air Force and Navy Synthetic Theater Operations Research Model (STORM) is the only campaign-level model identified to date with nascent capability to include U.S. logistics as an independent variable in a simulated battlespace. The Air Force is assessing how this existing capability in STORM can be modified to address added energy requirements. Finally, the Marine Corps has developed the Marine Air-Ground Task Force Power and Energy Model to provide demand-side quantitative modeling of energy consumption, scalable to the theater level, and is pursuing integration with operational M&S tools.

The Vice Chairman's ongoing Joint Capability Development Process Review is revisiting the formal requirements process, to include how an energy performance parameter will be framed within the relevant CJCS Instruction (currently 3170.01), which has previously called for a selectively applied energy Key Performance Parameter (KPP). The Office of the ASD(OEPP) partnered with the Navy N45 and the Joint Staff (J4) on two separate case studies that applied an energy performance parameter consistent with common practice on KPPs in the Joint Capabilities Integration Development System. The Marine Corps is developing policy and amplifying guidance for acquisition managers on defining and applying operational energy performance parameters to capability requirements, and the Office of the USD(AT&L) is currently developing options for addressing operational energy performance in a wider variety of acquisition approaches, to include rapid fielding.

Through current operations in the field and in ongoing acquisition programs, the Military Departments have gained substantial experience that should inform a methodology for estimating the Fully Burdened Cost of Energy (FBCE). The Navy recently released guidance on the role of energy in acquisition that mandated the use of FBCE. Several studies also have identified principles for how FBCE should be applied to tradespace (e.g., cost, schedule, performance) decisions in acquisition programs, and revised guidance will be developed for inclusion in the DoD Instruction 5000.02 and the Defense Acquisition Guidebook. Building on these efforts, ASD(OEPP) also led an OSD, Joint Staff, and Service effort to define a Department-wide methodology and executable guidance for FBCE development and application in acquisition programs. Once approved, this methodology will provide a baseline for use by the Military Departments.

Responsibilities. The Military Departments will report to the Defense Operational Energy Board (3<sup>rd</sup> Quarter FY 2012 and recurring) on how they are using or modifying analytic techniques and

M&S tools to account for operational energy considerations in force planning, capability gap analyses, requirements development, or acquisition program-related analyses. In addition, the Military Departments should provide any existing plans for proposed modifications to M&S tools that enable unit-level operational sustainment and sustainment protection analyses. These plans should include estimated overall schedule and costs (funded and unfunded) required to make modifications to specified models; estimated schedule and cost to conduct Verification, Validation, and Accreditation; and identification of supporting, engagement-level models and tools. Relevant models and tools may include, but not be limited to, engagement-level “feeder” models such as Airborne Weapons Analysis and Reporting System, Combat Sample Generator, and Attrition Model Using Calibrated Parameters. To perform this work, plans from the Military Departments should address any added U.S. force data required to populate and properly run the revised tools. Recognizing that enhancements to M&S tools will compete with other funding priorities, the co-chairs and members of the Defense Operational Energy Board will work with the Military Departments to identify appropriate funding.

In accordance with forthcoming Joint Staff policy, the Joint Staff, USSOCOM, and the Military Departments will include an energy performance attribute in the requirements development process. Through the Joint Requirements Oversight Council, the VCJCS will oversee implementation of this effort in individual programs. The Joint Staff, USSOCOM, and the Military Departments will report overall progress in implementing an energy performance attribute to the Defense Operational Energy Board (3<sup>rd</sup> Quarter FY 2012).

In accordance with forthcoming USD(AT&L) policy, the Military Departments will develop and apply FBCE analyses throughout the acquisition process. The Military Departments will report overall progress on implementing FBCE to the Defense Operational Energy Board (3<sup>rd</sup> Quarter FY 2012).

As appropriate for these requirements and acquisition processes, USD(AT&L), USD(Policy), and CAPE will provide support in execution of these efforts.

<b>Offices of Primary Responsibility (OPR)</b>	<b>Offices of Coordinating Responsibility (OCR)</b>
<ul style="list-style-type: none"><li>• Joint Staff</li><li>• USSOCOM</li><li>• Department of the Army</li><li>• Department of the Navy</li><li>• Department of the Air Force</li></ul>	<ul style="list-style-type: none"><li>• USD(AT&amp;L)</li><li>• USD(Policy)</li><li>• OSD CAPE</li></ul>

## Target 7: Adapt Policy, Doctrine, PME, and COMBATANT COMMAND Activities.

	Near-Term, FY 2012- FY 2013	Mid-Term, FY 2014- FY 2018	Long-Term, FY 2019+
• Adapt and Adopt Policy, Doctrine, and PME for Operational Energy		✓	✓
• Incorporate Operational Energy into Combatant Command Activities		✓	✓

Challenge. Over the last decade, DoD Components have identified lessons learned, baseline data, and extensive experience associated with global operations. While logistics, supply, and fuel are often components of these insights, the risks and opportunities associated with more effective management of operational energy are not. Likewise, the Department's educational institutions offer energy-related electives but do not consistently integrate operational energy into the instruction of strategy, resourcing, or operational planning. To capitalize on the Department's experience with large, expeditionary operations, the DoD Components should codify relevant operational energy insights in policy, doctrine, and professional military education.

Around the globe, the Combatant Commands employ a variety of capabilities to achieve security cooperation objectives in respective areas of responsibility that support the partnership goals outlined in the Quadrennial Defense Review, National Military Strategy, and other classified guidance. As operational energy improvements enhance the capabilities of U.S. forces, the Department can utilize similar technologies, models, capabilities, and concepts to enhance partnerships with established allies and strengthen relationships with new partners.

Ongoing Efforts. A broad array of Joint Staff, Defense agency, and Military Department organizations collect lessons learned, and PME programs offer courses, primarily electives, on operational and facilities energy. The Army and the Joint Staff have ongoing Capability Based Assessments associated with capability gaps and solutions related to energy and/or base camps, and the Marine Corps used an Expeditionary Energy Water and Waste Capabilities Based Assessment/Initial Capabilities Document to identify materiel and non-materiel gaps. The Army's evolving Operational Energy Campaign Plan also is assessing the role of non-materiel solutions to energy challenges across base camps, Soldiers, ground vehicles, and aviation. The Navy provides training and incentives for energy-efficient practices through the shipboard its Incentivized Energy Conservation program, and a similar program for Naval aviation is under development. Finally, there is a broad array of analytical work conducted by Federally Funded

Research and Development Centers, contractors, and non-profit entities that is relevant to policy, doctrine, and PME.

Regarding Combatant Command activities, U.S. Southern Command (USSOUTHCOM) successfully incorporated energy into its Theater Campaign Plan (TCP), USSOUTHCOM's 2- to 5-year, steady-state operational outlook, through the development of an Intermediate Military Objective (IMO) that includes operational energy in theatre security cooperation. As part of its counter-insurgency and village stability operations efforts in Afghanistan, USSOCOM has deployed energy technologies with immediate, positive impacts on local populations while improving the quality of life for USSOCOM Forces. In collaboration with development agencies, the International Security Assistance Force also is engaged in construction projects related to hydropower and biogas to build local capacity in Afghanistan.

Responsibilities. The Joint Staff and Military Departments will report to the Defense Operational Energy Board (4<sup>th</sup> Quarter FY 2012) how the risks and opportunities associated with reducing energy demand, increasing energy supply, and building energy security into the future force will be reflected in policy, doctrine, and PME. The scope of this target will include issuances; directives; instructions; field manuals; Joint and Military Department doctrine; intermediate and senior service school, Joint PME, and Advanced Joint PME curricula; and other relevant guidance.<sup>ii</sup> The Military Departments and the Joint Staff will report to the Defense Operational Energy Board with an action plan that identifies the specific policies, doctrine, and/or PME to be changed, the reason for and intent of the change, the nature of the change, and the date by which these adaptations will be complete. Defense agencies will support the collection and evaluation of lessons learned as well as the follow-on identification of specific changes in policy, doctrine, and PME.

As appropriate and consistent with annual classified guidance to the Combatant Commands, the Joint Staff and Combatant Commands will report to the Defense Operational Energy Board (4<sup>th</sup> Quarter FY 2012) on command measures to incorporate Operational Energy Strategy goals into ongoing activities. These activities will include, but not be limited to, TCPs, IMOs, Global Campaign Plans, Joint exercises, combined training, conferences, research and development and information sharing programs, and other activities designed to achieve theater and country objectives. The Department will introduce operational energy initiatives into engagements with partner nations, and through Foreign Military Sales and Direct Commercial Sales. Including operational energy initiatives in partner training will enhance achievement of existing Combatant Commands goals, and foster additional options related to energy supply and demand. Joint Staff or Combatant Command representatives will report to the Defense Operational Energy Board (4<sup>th</sup> Quarter FY 2012) on progress in meeting this target, as well as any needed resources.

Where appropriate, USD(Policy) will disseminate appropriate guidance for and recognition of operational energy considerations within Department documents to assist with the development and execution of various planning efforts (e.g., TCPs and IMOs). Subsequently, the Military Departments and Defense agencies will contribute through campaign support plans and implementation of Combatant Command strategies where partner operational energy issues are consistent with classified guidance to the Combatant Commands.

<b>Offices of Primary Responsibility (OPR)</b>	<b>Offices of Coordinating Responsibility (OCR)</b>
<ul style="list-style-type: none"><li>• Combatant Commands</li><li>• Joint Staff</li><li>• Department of the Army</li><li>• Department of the Navy</li><li>• Department of the Air Force</li></ul>	<ul style="list-style-type: none"><li>• USD(AT&amp;L)</li><li>• USD(Policy)</li><li>• USD(P&amp;R)</li><li>• Defense agencies</li></ul>

## **Appendix D:** **Defense Operational Energy Board**

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Governance and oversight of the Operational Energy Strategy Implementation Plan will be exercised through the Defense Operational Energy Board, co-chaired by ASD(OEPP) and a designee from the CJCS. This body will leverage ongoing DoD and Military Department processes, and be complemented by existing statutory, policy, and oversight responsibilities of the co-chairs and members. The Defense Operational Energy Board will provide a forum for DoD Components to share information and provide recommendations.

Membership of the Defense Operational Energy Board will include senior-level representatives from across the Department, including the Military Departments. The notional FY 2012 meeting schedule will include the following:

- 2<sup>nd</sup> Quarter FY 2012
- 3<sup>rd</sup> Quarter FY 2012
- 4<sup>th</sup> Quarter FY 2012

In addition to this planned schedule, the Defense Operational Energy Board will meet as needed based on events and decisions.

ASD(OEPP), in consultation with relevant offices within OSD, the Military Departments, Defense agencies, and the Joint Staff, will develop a charter that outlines the organization, governance, membership, functions, and responsibilities of the Defense Operational Energy Board and present the charter at the 2<sup>nd</sup> Quarter of FY 2012 meeting of the Board. The co-chairs shall review and approve the charter. In lieu of an approved charter, ASD(OEPP) will use existing authorities to oversee and immediately initiate execution of the Operational Energy Strategy through the targets and due dates identified in this Implementation Plan.

The co-chairs will report the results of Defense Operational Energy Board meetings to the Secretary of Defense and CJCS.

## Notes

<sup>i</sup> Army Vision for Net Zero: <http://army-energy.hqda.pentagon.mil/netzero/default.asp>; Navy Energy Vision for the 21<sup>st</sup> Century (October 2010), <http://greenfleet.dodlive.mil/files/2010/10/Navy-Energy-Vision-Oct-2010.pdf>; Air Force Energy Plan (2010), <http://www.safie.hq.af.mil/shared/media/document/AFD-091208-027.pdf>; United States Marine Corps Expeditionary Energy Strategy and Implementation Plan (March 2011), <http://www.marines.mil/unit/hqmc/cmc/Documents/USMC%20Expeditionary%20Energy%20Strategy.pdf>.

<sup>ii</sup> Basic training, branch/specialty training, unit-level operational training, exercises, and pre-deployment training are not included in target 7; see targets 2 for changes to Military Department training.

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